

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1-24. (cancelled).

25. (new) A processing means for pipelined processing of data packets, said processing means comprising:

an input arranged to receive data packets;

an output;

a device; and

a pipeline connected between the input and the output,

said pipeline having i) on an input side, at least one processing stage connected to receive the data packets from the input, ii) an access point connected to an output of said one processing stage, iii) a request channel connecting said access point to said device, said request channel comprising a transmit connection for transmitting a request from said access point to said device and a receive connection for said access point to receive a response from said device, said request being based on data processing information extracted from at least part of one of said data packets and any additional information associated with said one data packet, said request being at least one of i) a first type of said request directing said device to perform a

data processing operation which alters said one data packet, and  
ii) a second type of said request directing said device to  
perform a data processing operation which alters said any  
additional information associated with said one data packet, said  
response to said first type of said request including an  
alteration to said one data packet, said response to said second  
type of request including an alteration to said any further  
additional information associated with said one data packet,  
wherein,

said access point comprises

i) at least one FIFO store for storing data entering  
the access point, said data corresponding to said at least part  
of said one data packet and said any additional information  
associated with said one data packet,

ii) a response FIFO store connected to said device via  
said receive connection, said response FIFO store for storing a  
first response corresponding to said request, said first response  
received on the receive connection,

iii) a synchronization mechanism arranged to  
synchronize fetching of a first entry in said at least one FIFO  
store and the first response in said response FIFO store, said  
first entry corresponding to said at least part of said one data  
packet and said any additional information associated with said  
one data packet, and

iv) a response substitution entity connected to receive  
a) said first response as an output of said response FIFO store  
and b) said first entry as an output of said at least one FIFO  
store, said response substitution entity arranged to form a  
resultant data packet by merging said received first response  
into said received first entry, said resultant data packet being  
an output of said access point.

26. (new) The processing means of claim 25, wherein,  
said input is a receiver,  
said output is a transmitter,  
said access point comprises plural of said request  
channel, and

said access point provides simultaneous access to  
plural of said device via said plural request channels, in  
response to the request from said access point, each said device  
adapted to perform a corresponding data processing operation  
which alters at least a part of one of i) a corresponding data  
packet and ii) a corresponding additional information associated  
with the corresponding data packet, and

a further access point is connected intermediate an  
output side of the input and the input side of the one processing  
stage such that the one processing stage is connected to receive  
data packets input via the further access point.

27. (new) The processing means of claim 26, wherein,  
said access point comprises plural of said receive  
connection and plural of said response FIFO store,  
each one of said plural receive connections is  
connected to one of said plural response FIFO stores, and  
said access point provides simultaneous access to  
plural of said device via said plural request channels, in  
response to the request from said access point, at least one of  
said device adapted to perform respective corresponding data  
processing operations which alters i) the corresponding data  
packet in response to said first type of said request, and ii)  
the corresponding additional information associated with the  
corresponding data packet in response to said second type of said  
request.

28. (new) The processing means of claim 26, wherein  
said synchronization mechanism is a fixed delay mechanism adapted  
to initiate a fixed time delay upon entry of at least part of a  
data packet into the access point.

29. (new) The processing means of claim 28, wherein  
said fixed time delay is equal to or longer than the time  
required to process the most time consuming data processing  
operation by any of said plural devices.

30. (new) The processing means of claim 28, wherein said fixed time delay mechanism comprises is adapted to transmit a triggering signal when the initiated fixed time delay has elapsed.

31. (new) The processing means claim 28, wherein said fixed time delay mechanism comprises a shift register.

32. (new) The processing means of claim 25, wherein, said access point comprises plural of said response FIFO store with a first entry, and

said synchronization mechanism comprises completion driven conditional logic adapted to determine whether all relevant response FIFO stores from among said plural response FIFO stores have data in the first entry.

33. (new) The processing means of claim 25, wherein, said access point further comprises an access unit connected to said transmit connection, and

said access unit is adapted to receive the data processing information extracted from said one data packet, said access unit adapted for using said data processing information in creating said request and to transmit said request to said device on said transmit connection.

34. (new) The processing means of claim 33, wherein,  
said data processing information comprises information  
related to the handling of the response received from said  
device; and

said access unit comprises an access unit FIFO store  
for storing said information related to the handling of the  
response.

35. (new) The processing means of claim 26, wherein,  
said access point comprises plural access units and  
plural of said transmit connection, each an access unit connected  
to different one of said transmit connections, each transmit  
connection connected to a different one of said devices, and

each said access unit is adapted to receive the data  
processing information extracted from said one data packet, to  
use said data processing information in creating said request and  
to transmit said request to the connected one of said devices on  
said connected transmit connection.

36. (new) The processing means of claim 30, wherein,  
said access point comprises an access unit connected to  
said transmit connection, said access unit being adapted to  
receive the data processing information extracted from said one  
data packet, to use said data processing information in creating

said request and to transmit said request to said device on said transmit connection, and

said fixed time delay mechanism is adapted to sending said triggering signal at least to said access unit, said access unit being adapted to fetching the response in said response FIFO store(s) responsive to said triggering signal.

37. (new) The processing means of claim 25, wherein said access point comprises a driver table comprising data processing information entries and associated driver identifier entries, said access point being adapted to receiving a driver identifier and to extracting, via said driver identifier, data processing information from said driver table.

38. (new) The processing means of claim 26, wherein, said access point comprises a driver table comprising data processing information entries and associated driver identifier entries said access point being adapted to receiving a driver identifier and to extracting via said driver identifier, data processing information from said driver table, and

said access point comprises a driver table for each of said request channels.

39. (new) The processing means of claim 25, further comprising:

at least one switch being connected between at least one transmit connection and plural devices, said switch being configurable to provide access to any one of said devices via said transmit connection.

40. (new) An integrated circuit, comprising:

a processing means for pipelined processing of data packets, said processing means comprises an input, an output and a pipeline having at least one processing stage, said pipeline connected between the input and the output,

wherein said processing means further comprises:

at least one access point providing access to a device;

a request channel connecting said device to said access point, said request channel comprising a transmit connection for transmitting a request to said device and a receive connection for receiving a response from said device, said request is based on data processing information extracted from at least part of one of said data packets and any additional information associated with said one data packet,

said access point comprising at least one FIFO store for storing data entering the access point, said data corresponding to said at least part of one of said data packet and any additional information associated with said data packet;



said access point further comprising a response FIFO store connected to said device via said receive connection,

said response FIFO store for storing a first response corresponding to said request and received on the receive connection; and

said access point further comprising a synchronization mechanism adapted to synchronize the fetching of the first entry in said at least one FIFO store and the first response in said response FIFO store, said first entry corresponding to said at least part of one of said data packet and any additional information associated with said data packet; and wherein a response substitution entity is configured to merge said first response into said at least part of one of said data packet and any additional information associated with said data packet.

41. (new) A computer unit comprising:

an integrated circuit having a processing means for pipelined processing of data packets, wherein said processing means comprises an input, an output and a pipeline having at least one processing stage, and wherein said pipeline is connected between the input and the output, wherein,

said pipeline has at least one access point providing access to a device;

said device is connected to said access point via a request channel;

said request channel comprises a transmit connection for transmitting a requests to said device and a receive connection for receiving a response from said device;

said request being based on data processing information extracted from at least a part of one of said data packet and any additional information associated with said data packet;

said access point comprises at least one FIFO store for storing data entering the access point; said data corresponding to said at least part of one of said data packet and any additional information associated with said data packet;

said access point further comprises a response FIFO store connected to said device via said receive connection, said response FIFO store for storing a first response corresponding to said request and received on the receive connection; and

said access point further comprises a synchronization mechanism adapted to synchronize the fetching of the first entry in said at least one FIFO store and the first response in said response FIFO store, said first entry corresponding to said at least part of one of said data packet and any additional information associated with said data packet; and wherein a response substitution entity is configured to merge said first response into said at least part of one of said data packet and any additional information associated with said data packet.

42. (new) A method of pipelined processing of a data packet in a processing means comprising a pipeline, said pipeline comprising at least one processing stage, wherein said method comprising the following steps:

receiving, in an access point of said pipeline, at least part of said data packet;

extracting data processing information from said at least part of one of said data packet and any additional information associated with said data packet,

storing at least part of the data packet and any additional information associated with said data packet in at least one FIFO store in said access point;

transmitting, from said access point, a request, based on said extracted data processing information, to a device on a transmit connection;

receiving, in said access point, a first response corresponding to said request, from said device on a receive connection;

storing said first response in a response FIFO store in said access point, said response FIFO store being connected to said device via said receive connection;

extracting the first response in said response FIFO store and the first entry in said at least one FIFO store, said first entry corresponding to said at least part of one of said

data packet and any additional information associated with said data packet; and

merging, said first response into said at least part of one of the data packet and any additional information associated with said data packet.

43. (new) The method of claim 42, wherein more than one request is transmitted simultaneously from said access point on more than one transmit connection, each transmit connection being connected to a different device.

44. (new) The method of claim 42, comprising the further step of initiating a fixed time delay,

wherein said step of extracting is performed responsive to the elapse of said fixed time delay.

45. (new) The method of claim 44, wherein a triggering signal is generated when said fixed time delay has elapsed, and said step of extracting is performed responsive to said triggering signal.

46. (new) The method of claim 42, comprising the further step of extracting data processing information associated with said data packet, prior to said step of transmitting, said step of extracting data processing information being performed by

use of an access point reference in additional information,  
wherein,

said request is prepared according to said data  
processing information, and

said step of merging is performed according to said  
data processing information.

47. (new) The method of claim 46, wherein,

said step of extracting data processing information  
further comprises the steps of: a) extracting, from said access  
point reference, a driver identifier, and b) looking up said  
driver identifier in a driver table, said driver identifier being  
associated with data processing information in said driver table.